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PENSOFT

Southernmost records of *Hyalinobatrachium fleischmanni* (Anura: Centrolenidae)

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Abstract
We present new records for Fleischmann's Glassfrog, *Hyalinobatrachium fleischmanni* (Boettger, 1893), which extend the distribution of this species into central and southwestern Ecuador and thus represent the southernmost known localities. These new reports are based on specimens collected at Cerro de Hayas, province of Guayas, and Macul, province of Los Ríos. These new localities extend the known geographic range of *H. fleischmanni* by approximately 250 km south of previous known occurrences.

Key words
Glassfrogs; western Ecuador; distribution; Guayas; Los Ríos.

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Introduction

Hyalinobatrachium fleischmanni (Boettger, 1893) has the widest geographic distribution of any species of the family Centrolenidae. It occurs from southern Mexico to central-western Ecuador, from sea level up to 1800 m elevation (Kubicki 2007, Frost 2016). In Ecuador, *H. fleischmanni* inhabits Lowland Seasonal and Non-Seasonal Evergreen forests in the northern and central Pacific lowlands below 800 m elevation, with records in the provinces of Esmeraldas, Manabí, Pichincha, and Los Ríos (Lynch and Duellman 1973, Cisneros-Heredia and McDiarmid 2007a, 2007b, Delia et al. 2010).

Information regarding amphibians of western Ecuador is still fragmentary, and several species of the family Centrolenidae are known from just a few widely dispersed localities. The main explanation for this is the absence of information regarding alpha diversity for the family in the central and southern regions of Ecuador (Campos et al. 2007, Ortega-Andrade et al. 2010, Yanez-Muñoz et al. 2014). Herein, we present 2 new latitudinal records of *H. fleischmanni*, which expand its geographic range along the foothills and lowlands of central and southwestern Ecuador.

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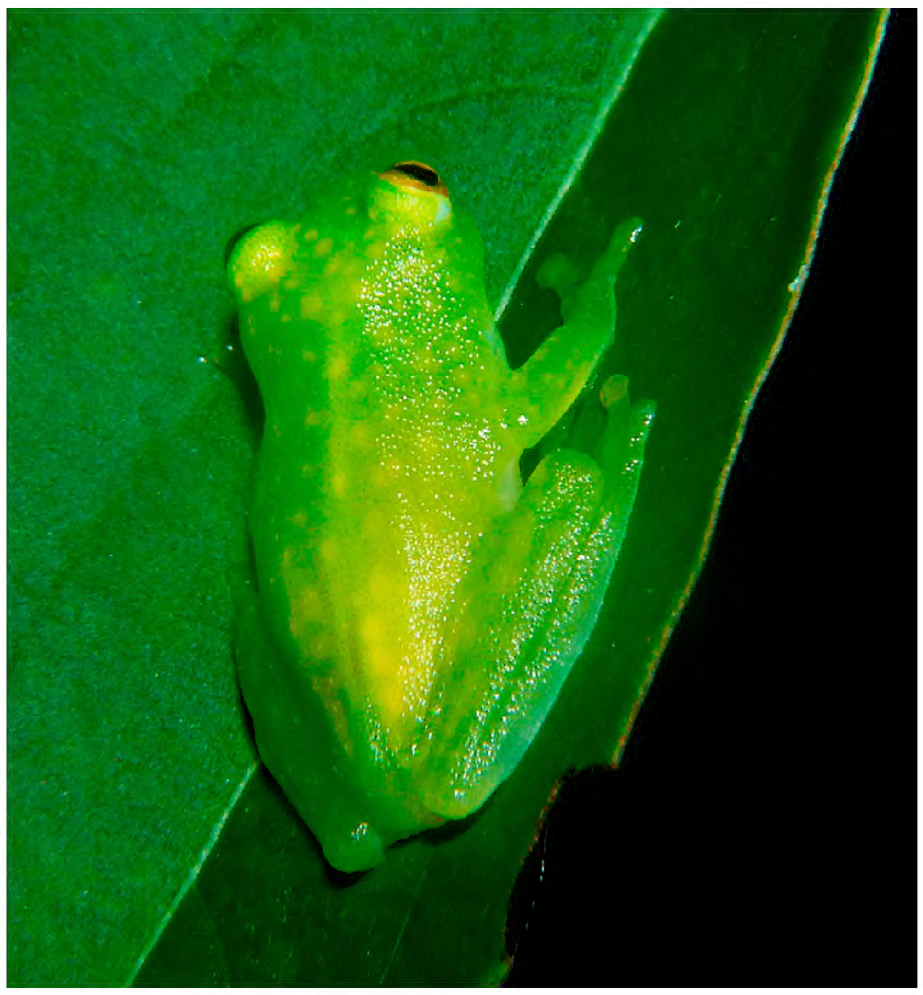

Figure 1. *Hyalinobatrachium fleischmanni*, adult male (MZUA.AN.1693) collected at Cerro de Hayas, province of Guayas, Ecuador. Photo by Fernando K. Cruz.

Methods

Specimens of *H. fleischmanni* reported herein are deposited at the Museo de Zoología, Universidad del Azuay and were collected by the authors under research permits of the Ministerio del Ambiente Ecuador (008-2015-IC-FLO/FAU-DPG/MAE and 002-2015-UB-UPN-DPALR-MAE). An adult male (Fig. 1) and a juvenile male (MZUA.AN.1693–1694) were collected at Cerro de Hayas (–02.7299, –079.6297, 127m), approximately 20 km southwest of Naranjal, province of Guayas (Fig. 3) on 12 December 2015. One juvenile (MZUA.AN.0660, Fig. 2) and 1 adult male (MZUA.AN.0661) were collected at Macul (–01.2279 S, –079.7531, 84m), approximately 40 km southwest of Quevedo, province of Los Ríos on 16 August 2015 (Fig. 3). All the specimens were found in fragments of riparian vegetation near paddocks and pastures.

Identification

The specimens exhibit the diagnostic features described by Goin (1964), Lynch and Duellman (1973), Ortega-Andrade et al. (2010), and Wild (2003). No significant variation is distinguished among the 4 specimens, either alive or preserved. Diagnostic features include: green dorsum with small yellow spots, and yellow iris with dark spots in life; transparent parietal peritoneum; pericardium and visceral peritonea covered by iridophores (i.e. white), and all other internal peritonea transparent; extensive webbing between fingers III and IV, but basal among all other fingers; and humeral spine absent (Figs 1, 2).

Discussion

These new records significantly extend the known geographic range of *H. fleischmanni*, representing the southernmost known localities for the species. Macul is roughly 95 km south and Cerro de Hayas is approximately 250 km south from the nearest previously documented locality (Río Palenque, –00.5667, –079.3333, province of Santo Domingo; Lynch and Duellman 1973, Cisneros-

Figure 2. *Hyalinobatrachium fleischmanni*, juvenile (MZUA.AN.0660) collected at Macul, province of Los Ríos, Ecuador. Note the distinctive coloration of this species, with green dorsum and yellow spots, with a yellow iris with dark spots. Photo by Juan Carlos Sánchez-Nivicela.

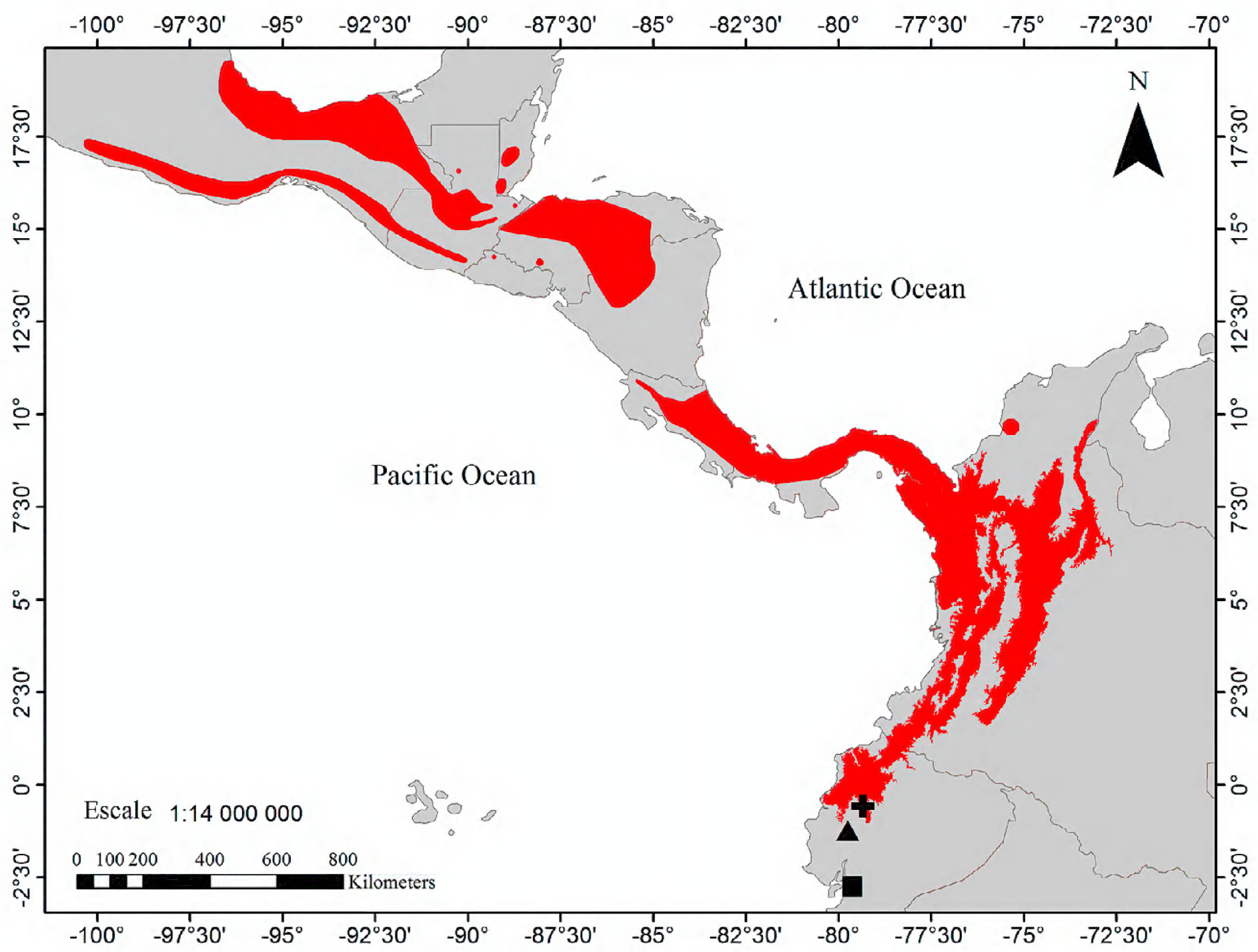

Figure 3. Geographic distribution of *Hyalinobatrachium fleischmanni*. The cross represents the previous southernmost record for the species in Río Palenque (Ecuador). The triangle and square represent the new southernmost records for the species as reported herein at Macul and Cerro de Hayas (western Ecuador). Information about the distribution of *Hyalinobatrachium fleischmanni* was obtained from IUCN (2016) and Acosta-Galvis (2012).

Heredia and McDiarmid 2007b; Fig. 3). In addition, Cerro de Hayas is the first known locality of *H. fleischmanni* in the province of Guayas.

These new records reveal the presence of *H. fleischmanni* across the Pacific lowlands of Ecuador, in the Western Ecuador Biogeographic Province (sensu Morrone 2014). Despite extensive habitat destruction within this region, *H. fleischmanni* still maintains small populations in small forest fragments; more studies are needed in order to determine whether there is any need for local conservation efforts. However, as *H. fleischmanni* is a widespread species, even more studies are needed in order to explore its biogeography and taxonomic status to determine if we are indeed dealing with one species or a species complex. From this, we will be able to truly determine its local conservation status and extinction risk.

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Authors' Contributions

FKC, VLU and JCS collected the specimens; JCS and DFCH identified the specimens; VLU and DFCH wrote the text; VLU and JCS elaborate the map; DCS and DFCH reviewed the text and distributional maps.

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